

CHANGING THE TRAJECTORY OF ASTHMA MORBIDITY THROUGH AN EARLY CHILDHOOD ASTHMA INITIATIVE IN MISSOURI



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INTRODUCTION

In Missouri, asthma is common among children (7.9%) and adults (9.2%) with more than one-half million people with the condition.^{1,2} Racial disparities also exist with the prevalence of asthma almost 3x higher among African-American (17.4%) than white children (6.5%). Many families have not received the needed information to manage and achieve asthma control. As a result, asthma is a leading cause of health care utilization. The highest rate of asthma emergency room (ER) visits and hospitalizations are consistently among preschool children ages 1 to 4 years (Table 1).^{3,4}

Table 1. Asthma emergency room visits and inpatient hospitalizations among children by age group, gender and race Missouri, 2011

Age and Gender	Emergency Room Visits Per 1,000*			Hospitalizations Per 10,000*		
	White	African American	All Races	White	African American	All Races
Less than 1	3.2	16.5	5.5	9.3	24.8	12.0
Male	4.2	22.6	7.4	13.2	35.2	17.1
Female	2.0	10.1	3.4	5.1	14.0	6.5
1 to 4	7.4	49.2	15.5	19.2	83.4	32.8
Male	9.6	60.3	19.6	22.5	105.2	40.4
Female	5.2	37.6	11.2	15.8	60.8	24.8
5 to 9	5.8	38.8	11.7	9.0	72.5	20.5
Male	7.3	47.1	14.4	10.7	85.6	24.1
Female	4.2	30.2	8.9	7.2	59.0	16.7
10 to 14	3.6	22.1	6.9	3.5	40.9	9.9
Male	4.0	26.2	8.0	3.9	49.6	11.8
Female	3.1	17.7	5.7	3.0	31.9	7.8
15 to 17	2.7	15.5	4.9	3.1	22.6	6.6
Male	2.1	14.3	4.2	2.6	24.5	6.4
Female	3.3	16.7	5.6	3.8	20.6	6.8

*Age group specific rates.
Source: Missouri Department of Health and Senior Services, Missouri Information for Community Assessment

In October 2009, the Missouri Asthma Prevention and Control Program (MAPCP) partnered with the Missouri Department of Social Services (DSS) to address asthma in licensed childcare facilities statewide. The *Childhood Asthma Initiative* (CAI) provided training, tools, and equipment to Environmental Specialists (ES) and Childcare Health Consultants (CCHC) in Local Public Health Agencies (LPHA) statewide to promote quality improvement in asthma management.



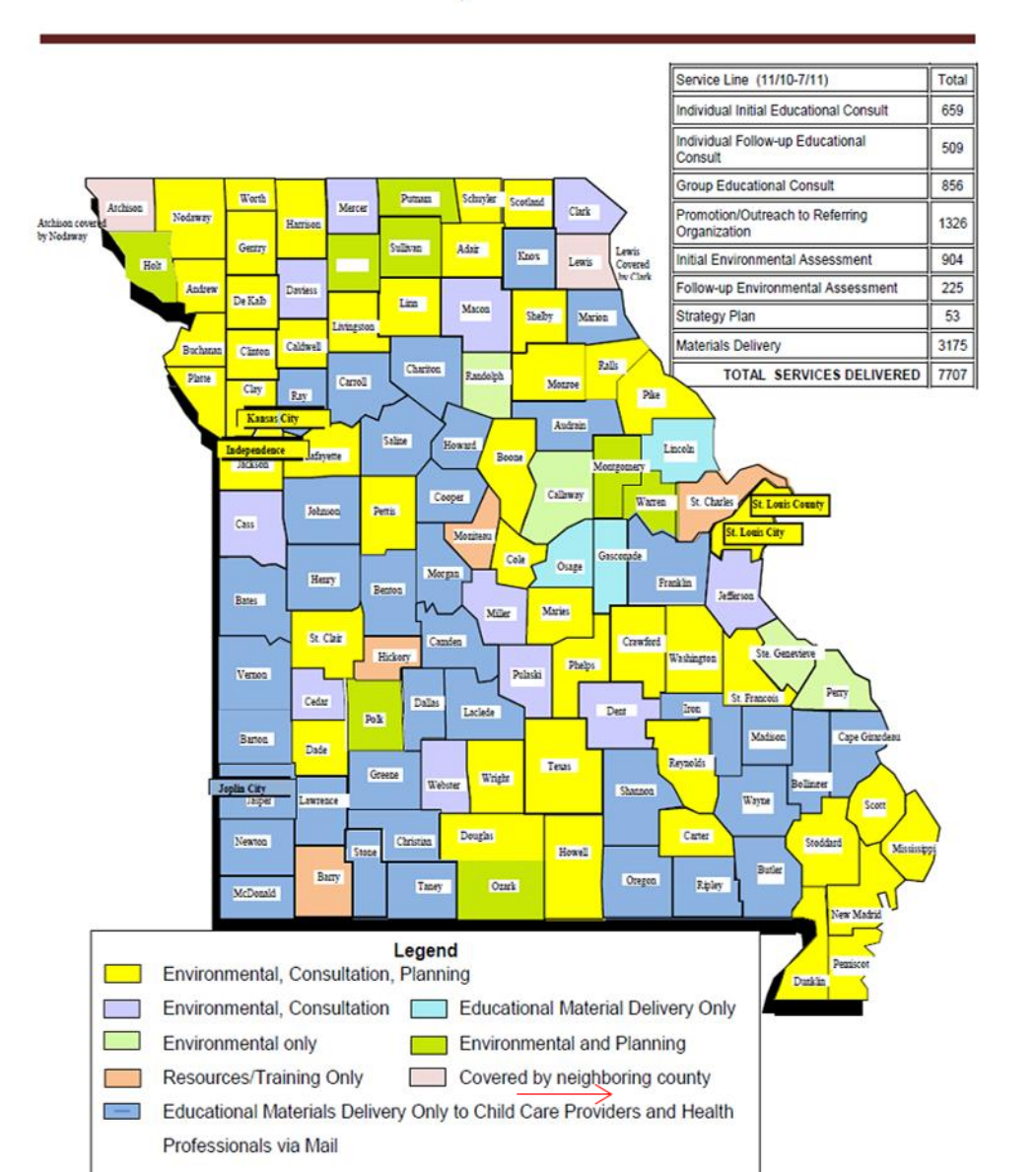
Objective of this study was to assess the outcomes of participation in the Early Childhood Asthma Initiative for educators, children and child care facilities.

METHODOLOGY

The DHSS Institutional Review Board reviewed and approved the CAI which was implemented statewide through contracts with LPHAs. On-line asthma management training was provided to ESs and CCHCs with pre- and post- knowledge testing. The three on-line courses included an Overview of National Asthma Guidelines, *Delivering Asthma Education for Caregivers and Becoming an Asthma Educator and Care Manager*. The pre- and post-data were analyzed using paired t-test. Regional environmental assessment trainings with Indoor Air Quality Monitors were also provided. Following completion of at least 6 hours of training, staff received equipment, environmental assessment checklist and asthma educational materials for the childcare facilities and families. The ESs provided information to childcare centers on indoor air quality assessments and asthma triggers. The CCHCs provided education to families on in-home air quality and asthma management in pre-school children – *the ABC Program*.^{5,6} Families receiving one-on-one consultation and education were invited to complete an assessment of their child's asthma before the education and by phone follow-up, 60 to 90 days later. Data were scanned and analyzed using Chi-Square test. Telephone follow-up with randomly selected child care facilities assessed the impact of the environmental assessments. Data were analyzed using SPSS v 20, IBM Corporation.

RESULTS

Figure 1. Early Childcare Asthma Initiative ARRA Project 2010-2011



The CAI was implemented statewide (Figure 1). A total of 106 ESs and CCHCs completed one or more of the three CAI on-line training courses and participants' knowledge scores significantly increased pre- to post-test for all courses (Figure 2). The largest improvement was for the national asthma guidelines overview; an increase of 43.7 percentage points.

Figure 2. Early Childhood Asthma Initiative on-line trainings by local public health agency staff, pretest and posttest results (N = 106)

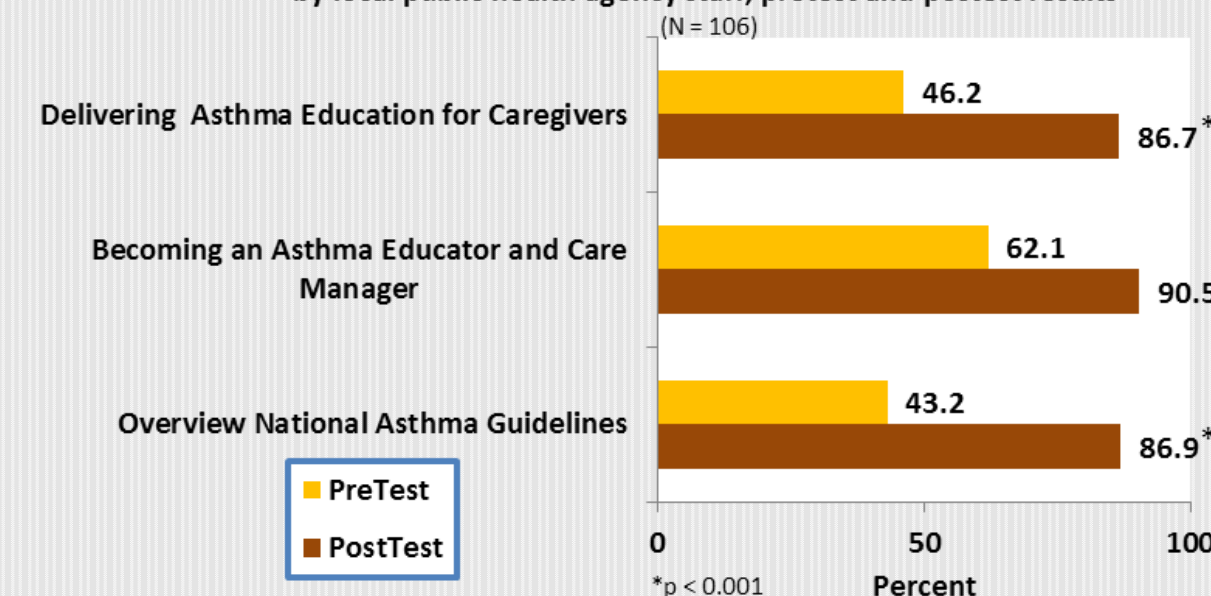
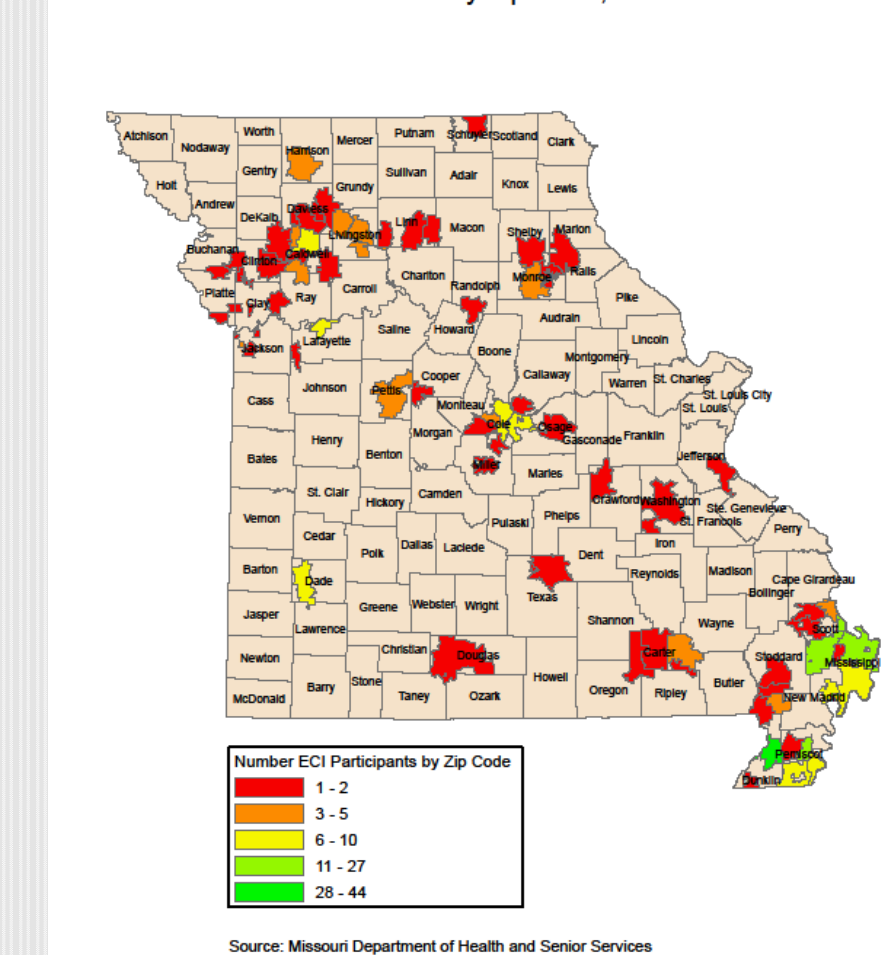
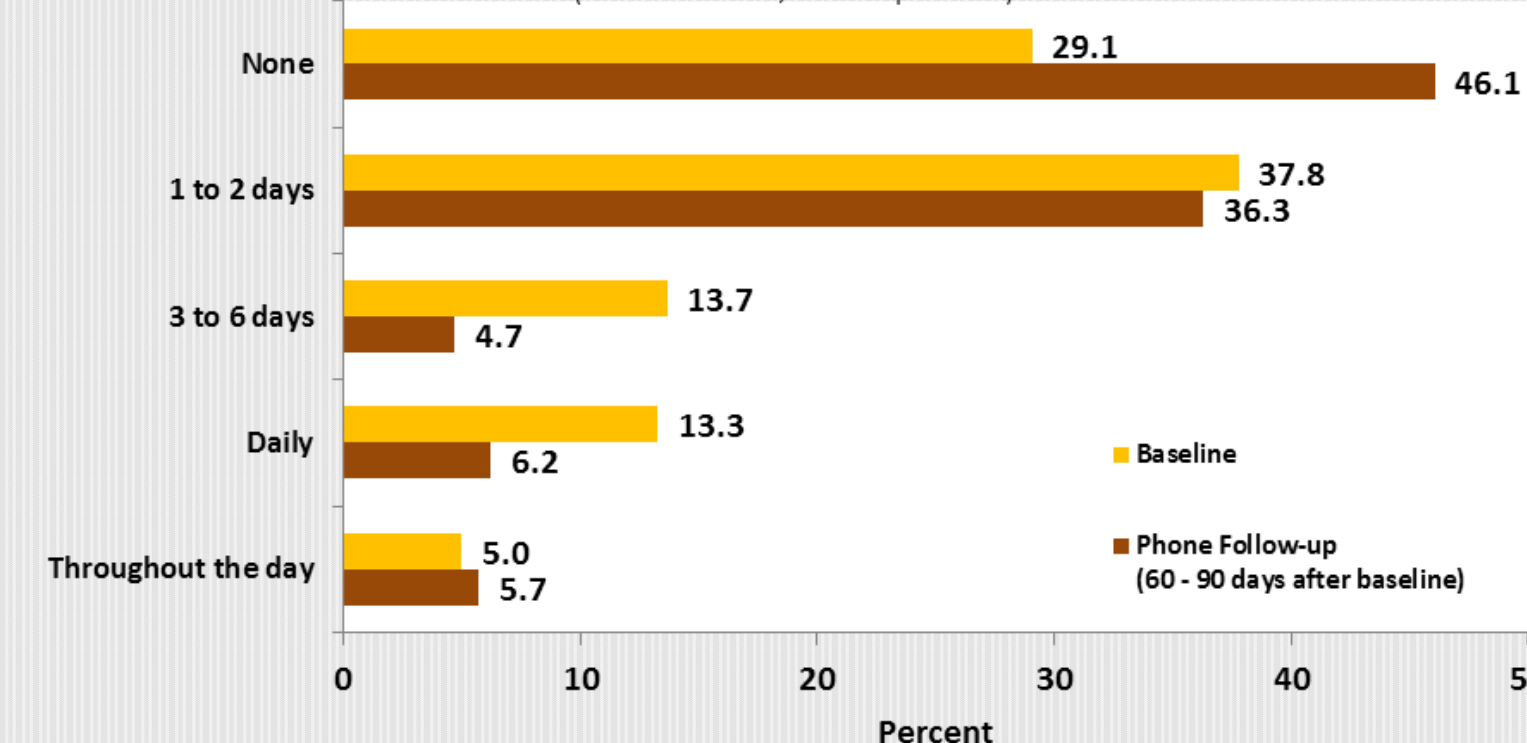


Figure 3. Number of Families in the Missouri Early Childhood Asthma Initiative by Zip Code, 2010-2011



The parent-caregiver assessments were received from 77 zip codes (Figure 3) and revealed children had significant declines in asthma severity, days of disruption in routines (Figure 4), nights of being awakened by asthma symptoms and days of albuterol use and increased daily inhaled corticosteroids and written asthma plans (p<.001).

Figure 4. Parent/caregiver report of days per week asthma symptoms (coughing, trouble breathing, or wheezing) disrupt child's routines (Baseline N = 278; Follow-up N = 193)



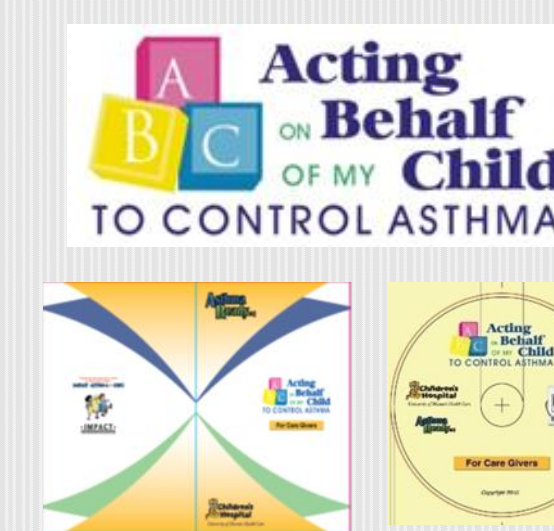
Thank you to the families, the Missouri Local Public Health Agencies and the Missouri School Boards Association for being a part of the CAI.

Results (cont.)

About 900 childcare facilities had initial environmental assessments with 113 randomly chosen for the telephone follow-up and 51 completed the survey. Of those completing follow-up (Figure 5), 45% had made changes to improve the childcare facility environment including:



CONCLUSION



This phase I evaluation showed that the CAI increased asthma knowledge, supported healthy environments and provides evidence that the program effectively reduced parent-reported asthma morbidity (i.e., symptoms) in children with asthma.

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